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ABSTRACT

A study was conceived to develop, implement, and evaluate the Structural-Response Instructional Model for increasing reading/thinking skills through written responses to a text's macrostructure. The study sought to determine: (1) if writing activities increased students' reading comprehension, (2) if the model effectively increased reading comprehension, and (3) if this model effectively increased inferential comprehension. Subjects, 81 students in three remedial reading classes at a Florida junior college, were randomly assigned to a reading-only group, to a group writing opinion responses, or to a group writing structural responses. At the end of 15 weeks, reading comprehension was assessed using the Stanford Diagnostic Reading Test. Results indicated significant differences between groups in total and inferential comprehension. A subsequent comparison of the structural-response group with the opinion-response group confirmed that writing structural responses enabled more students to reach higher levels of inferential comprehension--73% of these students achieved 80% accuracy. The results suggest that the Structural-Response Instructional Model is a pragmatic way to use writing to increase students' understanding of written discourse as well as to increase their reasoning skills. Based on the results, it was recommended that the Structural-Response Instructional Model be incorporated into the college's reading program. (An extensive bibliography is appended.) (NKA)

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THE DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF AN INSTRUCTIONAL MODEL TO INCREASE COMPREHENSION THROUGH WRITTEN STRUCTURAL-RESPONSE TO TEXT

by

Jean Bravick

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Nova University

July, 1986

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J.B.

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July, 1986

St. Petersburg Junior College (SPJC) requires large numbers of incoming students to enroll in College Reading Techniques classes because of deficient reading skills. These students have a particular lack of the higher level inferential reading/thinking skills. Although the value of using student writing to develop those skills has been indicated, little research has been done to identify the instructional methods most effective in college reading classes.

It was the purpose of this study to develop, implement, and evaluate an instructional model to increase reading/thinking skills through written responses to the macro-structure of the text read. Answers were sought to the following basic research questions: 1) Did writing

activities increase the reading comprehension of students? 2) Did the structural-response model increase the reading comprehension most effectively? 3) Did the structural-response model increase the inferential comprehension most effectively? Hypotheses were formulated and tested for significance by analysis of variance and t-test with .05 as the acceptable probability level.

The Structural-Response Instructional Model was developed on the concepts of cognitive psychology and psycho-linguistics. Evaluation of the model was done in an experimental study. The sample for the three group study consisted of three reading classes. Membership in the classes was determined by chance enrollment and students were similar in reading ability as determined by placement test. The classes were assigned to the following groups by random drawing: 1) the reading-only group, 2) the group writing opinion-responses, and 3) the group writing structural-responses. At the end of the fifteen week study, reading comprehension ability levels were assessed by The Stanford Diagnostic Reading Test.

The results of the study indicate significant differences between groups in total comprehension and in inferential comprehension. In the subsequent comparison of the structural-response group and the opinion-response group, the difference was highly significant. For further comparison of the three groups, the test scores in inferential

comprehension were distributed into intervals and it was readily discernable that writing structural-responses enabled more students to reach higher levels of inferential comprehension. Seventy-three percent of these students achieved eighty percent accuracy.

It was concluded that the Structural-Response Instructional Model was a pragmatic way to use writing to increase more complete understanding of written discourse as well as to increase the students' reasoning skills. This conscious use of text structure led to relevant deductions based on accurate information. However, free writing of opinion responses did little to increase reading ability. In addition, this writing method had inherent problems in the students' lack of writing skills, and the difficulty of connecting opinion-writing to a strategy helpful in other reading situations. Hence, it was concluded that time spent on such writing was not warranted in reading classes. It was recommended that the Structural-Response Model be incorporated into the reading program at SPJC. It was also recommended that a workshop be given to present the model to instructors and teaching assistants, and that the study be replicated.

The complete results and recommendations were presented to English department administrators at SPJC and to the Director of Research and Development. A proposal was submitted to the International Reading Association (IRA)

for the paper to be read at the 1987 annual convention. An article will be sent to Forum for Reading, College Reading Improvement Group, IRA, for possible publication.

This study extended current research in reading in two ways. First, it provided empirical evidence to guide instructional decisions concerning the value of using writing to enhance reading skills. Second, it demonstrated a pragmatic instructional method to incorporate writing strategies into a reading program.

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Chapter 1

INTRODUCTION

Widespread concern has been expressed in recent years by educators, journalists, and the public at large concerning students' poor thinking skills. In A Nation at Risk (1983), the National Commission on Excellence in Education noted that students have a poor command of intellectual skills such as drawing conclusions and solving problems. The National Assessment of Educational Progress (1981) has reported that (1) most students lacked systematic strategies for examining what they read in order to understand it fully, and (2) although students could make some sound responses, they did not know how to support or explain their responses. The problem continues in college.

St. Petersburg Junior College (SPJC) is a community college with an open-door policy. In 1985, approximately forty-five percent of the entering students were deficient in the reading skills necessary to understand college level texts as determined by placement test (Descriptive Tests of Language Skills of the College Board, 1979). These students are required to enroll in a reading course, College Reading Techniques. This is a fifteen week course with the objective of raising the reading ability levels

of these students to levels commensurate with their grade level. In addition, the Florida State Legislature (State Board of Education Rules 6A-10.31 and 6A-7,17, Florida Administrative Code) has mandated that junior college students reach specified ability levels in reading prior to graduation, thus increasing the scrutiny of the efficacy of these reading classes. Instructors have continued to seek strategies to develop the higher order skills that are viable in classes of thirty students. It was the purpose of this study to develop, implement, and evaluate an instructional model to increase reading/thinking skills through specifically structured written responses to the macro-structure of the text read.

Background and Significance

Traditional Reading Programs

The last fifty years have brought about an increase in the number of college reading programs, but not much change has occurred in the methods used (Nist and Hynd: 1985). Traditionally, after diagnosis by reading test, a set of skills is prescribed to remediate weaknesses. Thus, reading skills are taught, not reading and thinking strategies. In a survey of college reading programs in Southeastern United States, Gordon and Flippo (1983) found a shift away from exclusively lab-oriented individualized programs toward more structured class

presentations using text books. However, the instructional process in the reading text is still the presentation and explanation of a particular skill, such as locating the main idea or drawing a conclusion, followed by reading passages and answering multiple-choice questions to test ability in using that skill. There is concern among educators that this type of instruction is not preparing students for reading, analyzing, or synthesizing college texts in that students are not generating any ideas but simply choosing among several ideas presented to them (Rodriguez: 1985).

Reading and Writing Connection

Recent education studies, such as the Carnegie Report (Boyer: 1983) are calling for renewed emphasis on writing as a means to improve the higher level reading skills of analysis and inference. Tway (1985) notes that this reading/writing connection is one of the current catch phrases in education. Researchers have found these skills interrelated and reciprocal (Tierney and Pearson: 1983; Gebhard: 1983; Lundsford: 1978; Salvator: 1983). However, as noted by Strotsky in a synthesis of the research on reading/writing (1983), the exact nature of these relationships, as well as the influence of specific teaching methods upon their development, has yet to be determined. There is a particular paucity of research on instructional methods for college students (Guthrie:

1985). One method focuses on involving students in the reading process by asking them to respond to the ideas they have read. This response calls for formulation and expression of their reaction or opinion.

Reading with opinion-response writing. Parsons (1975) notes that a reader must not only perceive the literal meaning of the text but must also react in order to experience the full meaning of the ideas presented. Comprehension is a dynamic, sharing relationship between reader and text. To encourage this personal reaction to ideas, researchers have incorporated the writing of opinion responses to articles read into reading class activities. Santa et al (1985) developed an instructional sequence to encourage middle school and secondary students to become actively involved in their reading through the writing of an opinion-response to the text read. They did not report a statistical evaluation of their program; however, they noted that the students engaged in inferential and analytical thinking as they composed their responses to reading selections. Collins (1979) found that expressive writing practice combined with reading in a semester-long course for college freshmen improved their reading comprehension significantly more than did reading instruction alone for a control group. Walker-Lewis (1981) also found that expressive writing combined with reading

instruction in a college level reading course for under-prepared students improved their reading comprehension significantly more than a "traditional non-integrated program." Recent college text books for reading incorporate such opinion-response writing activities into their design (Troyka, 1984; Wiener and Bazerman, 1985; Zuckerman and Wojcik, 1984). Typically, a question is posed that relates to the ideas presented in a passage. In response, students express their opinion in writing. For example, after reading of a young woman's experience in teaching her grandmother to read, the students are asked, "Have you ever tried to teach someone something? What were your problems?" (Wiener and Bazerman: 1985). However, it has been noted (Strotsky: 1983) that this method may be more suited to the teaching of writing than to the teaching of reading and analyzing written text. In an investigation involving secondary students, Ferris and Snyder (1986) found a writing program failed to significantly influence ability. They concluded more research is needed before educators can use writing to improve reading. Lewis (1984) concluded that although writing instruction and writing activities designed to improve free writing has only a limited effect on reading comprehension, some specific writing activities or exercises could improve understanding of text.

Research Questions

At SPJC the incoming students had a problem understanding complex ideas presented in written discourse. They had trouble identifying important concepts and in drawing conclusions or making application of those concepts. The critical issue was determining the instructional method to guide students in developing strategies to achieve that higher level of comprehension. Answers were sought to the following research questions:

1. Did writing activities increase the reading comprehension of students in a college reading class more than just reading alone as measured by the Stanford Diagnostic Reading Test (1984)?

2. What type of writing increased the total reading comprehension score most effectively?

3. Did writing activities increase the students' higher level reasoning skills in inferential comprehension more than reading alone?

a. Was there any difference in inferential comprehension scores between students writing personal opinion-responses to posed questions and those writing responses to text macro-structure?

4. Did writing structural-responses enable more students to reach higher levels of ability in inferential comprehension than writing opinion-responses or traditional reading instruction alone?

Hypotheses

1. No statistically significant difference will be observed between the scores in total comprehension as measured by the Stanford Diagnostic Reading Test (1984) between the reading-only group, opinion-response group, and the structural-response group.

2. No statistically significant difference will be observed between the mean scores in total comprehension of the opinion-response group and the structural-response group.

3. No statistically significant difference will be observed between the scores in inferential comprehension as measured by the Stanford Diagnostic Reading Test (1984) between the reading-only group, opinion-response group, and the structural-response group.

4. No statistically significant difference will be observed between the mean scores in inferential comprehension between the opinion-response group and the structural-response group.

Definition of Terms

To clarify the design of this study, the following terms are defined:

Traditional reading instruction. A reading lesson consisting of the instructor presenting an introduction

to the vocabulary, reading skill to be emphasized, and background information needed to comprehend the passage. Students then read the passage on their own and are tested on their comprehension by answering multiple choice questions. Group discussion may follow of errors made if scores are consistently low.

Literal comprehension. The ability to comprehend explicitly stated meanings and details in written discourse.

Inferential comprehension. The ability to draw conclusions and make inferences and generalizations from explicity and implicitly expressed ideas in written discourse.

Generalizational statement. A statement that and a conclusion, makes an application, or notes the significance of ideas presented in written discourse.

Macro-structure of text. The main idea or global purpose of written discourse, as well as the major details to support that position.

Metacognition. The mental processes involved in learning composed of two overlapping and simultaneous components.

1. Awareness of what skills, strategies, and

resources are needed to perform a task effectively, and

2. Ability to use self-regulatory mechanisms to ensure the successful completion of the task.

Limitations

The use of intact classes at one institution limited the external validity of this study.

Assumptions

It was assumed that all classes were equal in motivation and were within the normal range of intelligence.

It was assumed the classes were homogeneous in age span, time of class, and prior school experience.

It was also assumed that the sample used in the study was representative of a junior college student body.

Chapter 2

REVIEW OF LITERATURE

A review of literature provided the conceptual base for the instructional model and gave direction to its development and implementation.

Learning Theory

Cognitive psychologists view learning as more than the accretion of elements. Indeed, they believe if certain phenomena are analyzed into their basic elements, the essence of the whole is lost (Hilgard and Bower: 1975). Cognitive theorists emphasize learning as a larger process of organization of the whole involving perception, insight, and problem solving. Thus, reading comprehension becomes, not a stockpile of specific and separate reading skills, but a process that enables the reader to understand the whole of a written text.

A psycholinguistic view of the reading process states that reading is an interactive process of communication between the author and reader (Coil and Bean: 1980). Thus, the reader must actively search for and reconstruct meaning from the text. Useful in this search for meaning are cues the author uses that are included in the organizational structure of the text. However, cognitive strain

and confusion are likely to occur when uninitiated readers are left to their own devices in the identification of key concepts, perception of important comparisons, or the relationship of ideas. Van Dijk (1977) emphasized the importance of the reader recognizing the macro-structure of written discourse as the first step in comprehending.

Use of Text Macro-Structure

In addition, Kintsch and van Dijk (1978) delineated a process mature readers use as they locate the major points in a discourse and reach comprehension of ideas. Their model of text comprehension involves four "rules" or steps.

1. Generalization. Reducing the number of specific parts to one category.

2. Deletion. Deleting irrelevant or minor information.

3. Integration and inferencing. Using inter-text information that is explicitly or implicity stated.

4. Construction. Restating the main idea using new terminology.

Although Kintsch and van Dijk worked mostly with narrative text, their work serves as a classic from which expository studies have evolved.

Other researches contributed information concerning the specific groups that make use of macro-structure of text in reading. Marshall and Glock (1978) found community college students recalled far less (23.4%) of

the meaningful units in text read than did the group of university students (52.6%). The community college students tended to use random listing of facts rather than a pattern denoting importance of facts while the university group responded to semantic macro-structure. Meyer (1979) noted that many beginning college students approach text assignments with restricted organizational schema. They may perceive all expository texts as simply a collection of details to be memorized rather than organized into a long-term schema that permits synthesis and evaluation. Hoskins (1983) found that only twenty percent of the college freshmen in her study used the macro-structure of the text and only fifty percent could identify the main idea.

Training in the Use of Macro-Structure

Some researchers evaluated the benefits of teaching the use of macro-structure to enhance reading, although most studies denoted areas of teaching rather than specific methods. The Brooks and Dansereau (1983) system is applicable to scientific prose. Bartlett (1981), in his studies with fifth through eleventh graders, used an intense instructional program including student workbooks, teacher manuals, and self-correcting activities to teach the awareness and knowledge of different types of structure. Students performed better after training. Seventy-two percent of the seventh graders were able to reproduce the macro-structure; for fifth graders, use rose from

thirty percent to eighty percent. Although Ferris and Snyder (1986) found a writing program failed to significantly influence the reading ability of secondary students, additional research demonstrated that explicit training in the use of specific procedures can significantly improve understanding (Fishco: 1985; Cate and Heerman: 1985; Horwitz: 1985). These strategies included text pattern awareness, paraphrasing, and summarizing.

Rhinehart and Platt (1984) reviewed metacognitive studies of readers and noted that adult and college readers who evidence metacognitive deficiencies may be the most promising candidates for strategy training since they appear to be more aware of and capable of monitoring their reading. These findings suggested the benefits of teaching the use of text macro-structure to enhance the reading skills of junior college students.

Chapter 3

PROCEDURES AND METHODOLOGY

Based on the comprehension model of Kintsch and van Dijk (1978), the following instructional model was developed that used writing to induce active analysis and reasoning as an aid in critical comprehension of complex written discourse.

The Structural-Response Instructional Model

After reading a passage, students completed a writing activity in response to the macro-structure of the passage. The written response process included the following steps:

1. Composing a one sentence statement of the main idea.

2. Listing the major supporting ideas.

3. Composing one generalization statement that can be inferred from the ideas presented in the passage.

4. Composing an application statement that indicates what personal use the reader has for the ideas or opinions presented in the passage.

Then, as pointed out by Massaro (1984), the important question remained "...whether the model can hold up to its experimental tests and whether practical application

can be derived from the model." In an effort to answer those questions, the following study was carried out.

Methodology

A three group experimental study was implemented to evaluate the instructional model for increasing reading comprehension through written responses to text macro-structure. The time span of the study was fifteen weeks, one semester.

The sample consisted of three reading classes of one instructor. The total number of students was eighty-one. All classes were morning classes and met for 150 minutes per week. Membership in a particular class was determined by chance enrollment but all of the students had a reading ability from the eleventh to the thirteenth grade level as determined by college placement test, Descriptive Tests of Language Skills of the College Board (1979), given at registration.

Each class was assigned to one of the following groups by random drawing:

1. Reading-only group, the control group, received the traditional reading skill instruction followed by practice in those skills in twenty passages, each with multiple choice questions from the textbook Reading Skills Handbook, (Wiener and Bazerman, 1985). The questions included both literal and inferential comprehension.

2. Opinion-response (O-R) group, completed the same activities as the reading-only group and wrote an opinion-response to a question posed which related to the subject matter of the passage. This 100-150 word writing included a lead, or topic, sentence followed by supporting or explaining sentences and a conclusion statement.

3. Structural-response (S-R) group completed the same activities as the reading-only group and, in addition, completed the structural-response composed of four steps:

1) Main idea statement
2) Major details
3) Generalization statement
4) Application statement

The strategies of identifying text macro-structure were taught in three stages using paragraphs from 100 Passages, Reader (Sack and Yourman, 1983). These passages are excerpts from the content areas of social studies, sciences, and humanities and varied in length from 200 to 1000 words.

Stage 1. Students identified the subject of text and recognized organizational pattern of passages of low reading difficulty (ninth grade level), and composed a main idea statement about that subject and listed major supporting ideas.

Stage 2. Students analyzed passages of moderate difficulty (tenth to thirteenth grade level), composed

a main idea statement, and listed major supporting ideas. In addition, students composed one generalization statement that could be inferred from ideas presented in the passage.

Stage 3. Students analyzed college level passages, composed a main idea statement, listed major supporting ideas, made one generalization statement inferred from details given, and composed the personal application statement.

Each stage (lasting two weeks) was introduced by lecture and instructor modeling of a sample passage, followed by whole class participation in completing the tasks for that stage on additional passages. This class effort was displayed on blackboard or overhead as it progressed with oral suggestions from individuals in the class. For the last introductory activity at each stage, each student completed the structural-response, working individually, one a minimum of five additional passages assigned.

The instrument used to determine reading achievement at the end of the fifteen week session was the Stanford Diagnostic Reading Test, Comprehension Section, Blue Level (1984). It was given to all students in the three groups (N=81). The test had sixty total points which included thirty literal comprehension questions and thirty inferential comprehension questions.

The individual total comprehension raw scores were ascertained and listed for each group. Then an item analysis was done for each individual score and the inferential comprehension scores were listed in rank order and arranged in intervals for each group.

Three sets of analyses were conducted at the .05 level of significance to determine results. The first set examined the three groups of students for differences in total reading comprehension scores. The second compared the groups for differences in inferential comprehension scores, and the third described the distribution of scores for the three groups.

Chapter 4

PRESENTATION OF RESULTS

Differences Between Groups in Total Comprehension

In the first analysis, the dependent variable of the total reading comprehension scores were analyzed for significance using a one-way analysis of variance (ANOVA). The statistic was significant, $F=(2, 77)\ 6.44\ p< .01$; thus, the first null hypothesis was rejected. The groups did differ significantly in total reading ability. The results are presented in Table 1.

Table 1

Total Score ANOVA

	SS	df	Ms	F
Between Sets	877.19	2	435.09	6.44*
Within Sets	5204.30	77	67.58	
Total	6074.49	79		

*p=<.01

To determine which dependent variable contributed most to the overall significance, a t-test for independent samples was applied to the comprehension scores of the

group using structural-response writing and the group using opinion-response writing. The structural-response (S-R) group has a mean of 50.1 and a standard deviation of 6.35. The opinion-response (O-R) group has a mean of 42.5 and a standard deviation of 9.03. These data, presented in Table 2, indicated the difference was significant, $t=(52)\ 3.65$, $p<.001$, so the second hypothesis was rejected. The students writing structural-responses were able to attain significantly higher levels in total comprehension than those students writing opinion-responses.

Table 2

Mean, Standard Deviation, Number and Calculated t for the S-R Group and O-R Group in Total Comprehension

	S-R Group	O-R Group	
Mean	50.1	42.5	
SD	6.35	9.03	
N	33	21	t(52)=3.65*

p=<.001

Differences Between Groups in Inferential Comprehension

In the second set of analyses, the inferential comprehension scores of the three groups of students were

examined for significance using a second ANOVA. The difference between groups was significant, $F(2,77)=4.84$, $p<.05$. Thus, the third hypothesis was rejected. There was a significant difference between groups in inferential comprehension. These data are presented in Table 3.

Table 3

Inferential Scores ANOVA

	SS	df	MS	F
Between Sets	162.9	2	81.4	4.84*
Within Sets	1301.2	77	16.8	
Total	1464.1	79		

*$p<.05$

To determine which dependent variable contributed most to this significance, a t-test was applied to the inferential comprehension scores of the S-R group and the O-R group. The S-R group had a mean of 24.66, standard deviation of 3; the O-R group had a mean of 21 and a standard deviation of 4. Again, the difference between writing groups was significant, $t(52)=3.14$, $p<.01$, and the fourth null hypothesis was rejected. Students writing structural responses were able to attain significantly

higher levels in inferential comprehension than those students writing opinion responses. The results are presented in Table 4.

Table 4

Mean, Standard Deviation, Number and Calculated t for the S-R Group and O-R Group in Inferential Comprehension

	S-R Group	O-R Group	
Mean	24.66	21	
SD	3	4	
M	33	21	t (52)=3.14*

*p<.01

These findings can be summarized according to the two kinds of analyses. (1) The study showed overall differences between the three groups in total reading comprehension and in inferential comprehension. (2) In the comparison of the two groups doing writing in conjunction with reading, it was established that the S-R group had the significantly higher mean score for both total and inferential comprehension. The standard deviation also reveals that the scores did not vary from the mean to the extent they did in the O-R group.

Range and Distribution of Inferential Comprehension Scores

For further comparison of the three groups, the range of the inferential comprehension scores was determined and the scores were distributed into intervals for each group. Figure 1 presents the distribution of the scores for the structural-response (S-R) group. The distribution was skewed to the top intervals as twenty-four (73°) of the students achieved the top two intervals indicating they answered eighty percent (80%) of the inferential questions correctly.

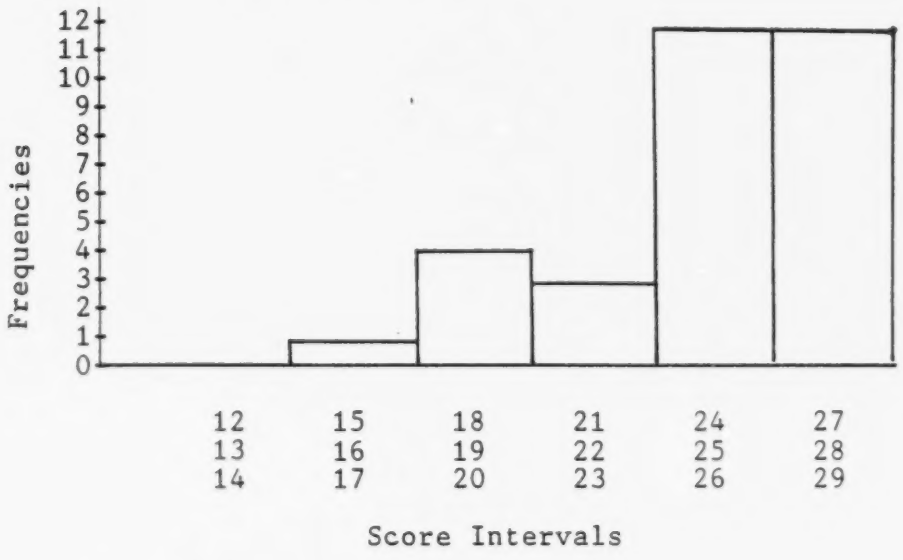

Figure 1

Histogram of Thirty-three Scores of S-R Group

The scores for the opinion-response (O-R) group were widely and quite evenly distributed from the lowest to the highest interval with eight (38%) of the students reaching the top two intervals (See Figure 2). Thus, a majority (62%) of the students in the group did not achieve competency, eighty percent accuracy, in the inferential skills.

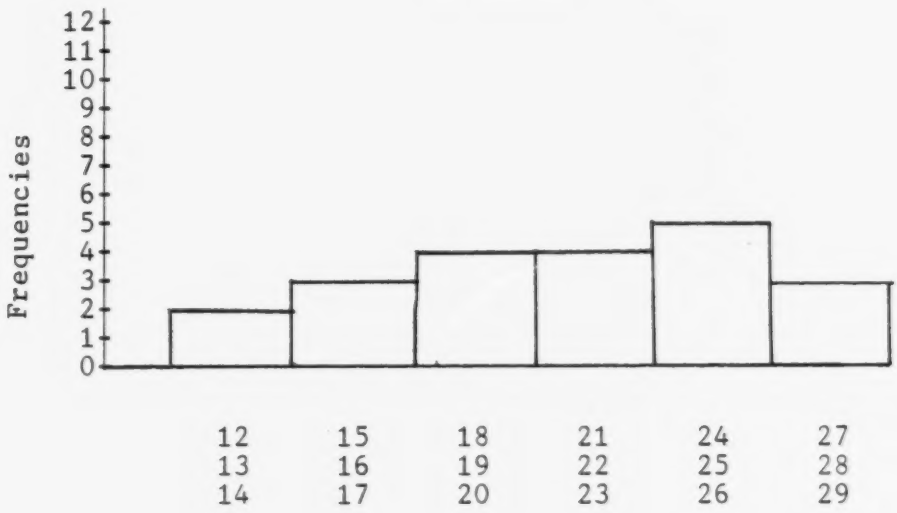

Figure 2

Histogram of Twenty-one Scores of O-R Group

The range of scores for the reading only group is presented in Figure 3. In this group, twelve students (46%) achieved the top two intervals indicating eighty percent accuracy on the inferential questions. This

was less than the S-R group (73%) but more than the O-R group (38%).

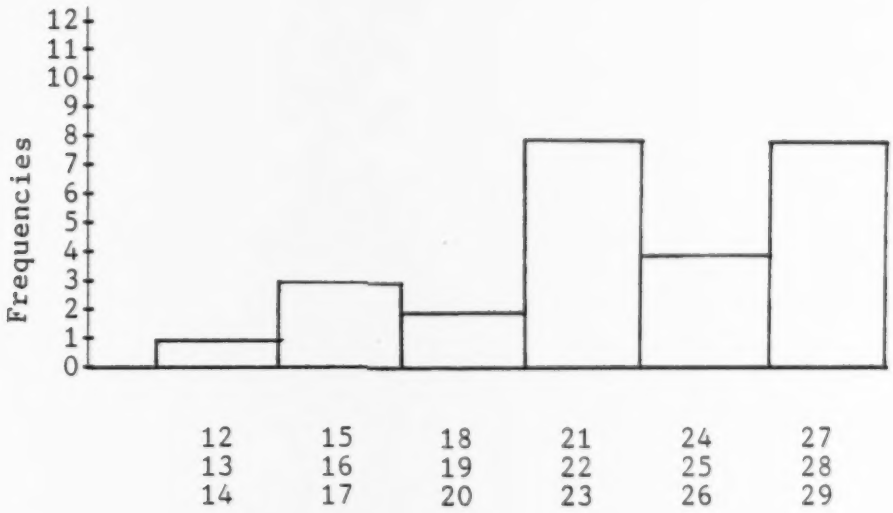

Figure 3

Histogram of Twenty-six Scores of Reading-Only Group

Chapter 5

INTERPRETATION, CONCLUSIONS, AND RECOMMENDATIONS

Interpretation of Results

The three instructional methods produced reading ability levels that differed significantly for the three groups. It could be expected that the writing activities had enhanced the reading ability of the students. However, it was found that the difference between the structural-response group and the opinion-response group was highly significant, indicating that not all writing resulted in better reading. The students writing structural-responses had a higher mean and the scores were skewed to the upper levels.

Although the difference in inferential comprehension did not discriminate between the three groups as well ($p<.05$), it was an interesting finding that the difference between the S-R group and the O-P group was again highly significant ($p<.001$), indicating that the structural-response method increased reasoning/thinking skills more than opinion writing.

It is also noteworthy that more of the students (73%) were able to achieve eighty percent accuracy in inferential comprehension after writing structural-responses to text. This reading/writing strategy has

value in that it increases the scope of reading instruction to include a step-by-step process that is apparently helpful to many students in developing their analytical reading skills. However, the distribution of scores for the group writing opinion-responses looked quite different. Only eight of the students (38%) achieved eighty percent accuracy and the scores dispersed quite evenly through the lower intervals. In comparison, the reading-only group had twelve students (46%) achieving eighty percent accuracy. Apparently, opinion-response writing has little or no advantage over reading alone for increasing the reasoning skills.

Increased learning results from the use of the structural-response instructional model for several possible reasons. First, the initial steps of the structural-response caused the students to focus on what was expressed in the discourse --the main idea and important supporting details. It was interesting to note that these steps proved to be the most difficult for the students to master. As earlier studies found (Marshall and Glock: 1978; Hoskins: 1983; Meyer: 1979), few students were able to perceive the structure or judge the relationships. They tended to list all details, no matter how minor. They often emphasized a colorful or shocking fact that was used merely as an example or illustration. It was only with explicit instruction, active discussion of the passages, and modeling of thought

processes that they were able to make use of this learning strategy on their own. Very importantly, however, this external control of their organizing thoughts and attention to accurate perception of the author's presentation led to later logical inferential thinking that was relevant to the subject being discussed.

Second, in independently writing the structural-responses, students seemed to step back from item by item listing of facts and viewed the text as a whole with a central focus and connected ideas. This encouraged more reasoning operations (evaluating, deleting, and generalizing) and led to more complex thought. An example is this structural response written after reading an article describing life in the Paleolithic Age.

> Main Idea: Although Paleolithic life was somewhat uncertain, the people of the Age had many accomplishments.
> Details: 1. The Paleolithic people made and used tools.
> 2. These people used reason to govern their actions and thought and language enabled transmission of culture to the young.
> 3. They created the first art work.
> Generalization Statement: The Paleolithic Age was the start of human culture. The use of his intellect is also man's basis for survival, then and now.
> Application: It is amazing that in such a short time modern man has discovered weapons that can destroy our environment. Is man getting smarter or dumber?

This study thus corroborates the findngs of the Langer (1986) study, in which less reasoning occurred in answering questions, and most reasoning resulted from summary writing.

Third, writing structural-responses caused the students to give tangible form to what they perceived in

the text, causing them to re-think, reformulate, and react to the information. This approach to writing about reading is derived from a powerful heuristic-- explanation by description and association-- that, as noted by Petrosky (1982), represents true understanding much more accurately than multiple-choice questions or free responses. In addition, like all frequently repeated activities, the effect became paradigmatic, a "prompt" to respond to any text. The students reported, happily, that it was easier to take notes from their college texts and they found themselves trying to make some application from facts learned.

In contrast, the opinion-response writing did not increase reading comprehension as much as reading alone, thus this study does not support the findings of Collins (1979) or Walker-Lewis (1981). Rather, this study supports the conclusion reached by Ferris and Snyder (1986) and others (Strotsky: 1983; Spivey: 1984), that free writing does not appear to increase reading ability and that the correlational data often presented on reading/writing skills does not clearly substantiate cause and effect.

Two recurring and related problems plagued the opinion-response instructional method. One major concern was that the students' responses did not make many links with the substance of the text. They were often unfocused, shallow, rambling opinions on the article rather then being an extension or application of the main point

of the author. For example, this is an opinion-response written after reading the article on the Paleolithic Age in response to the question "If you could travel back in time to the Paleolithic Age with one bag, what would you take and why?"

> If I had a ticket to travel back to the Paleolithic Age, I would bring in my one suitcase nothing, I would prefer to see and live life back then as it really was. I would eat, though not willingly, what they ate. I would use for clothing what they used. To see the real way of life you wouldn't have any choice but to keep everything as it was. The world progressed quite nicely without any of the modern "luggage" so why would we want to disrupt that? Or I would bring knowledge of medicine. Who knows what other advances they would have made if they were capable of living longer?

It can be surmised that this lack of attending to text information did not foster development of a strategy useful in reading other texts. In addition, the poor writing skills of many of the students posed a problem. The students needed help in the mechanics of organizing and expressing ideas, so the instructor was faced with the dilemma of accepting any writing or spending instructional time on writing skills. For busy community college students, the time-on-task of writing and rewriting the opinion-responses decreased the time spent on reading and thinking about the author's presentation. This dual focus may have been detrimental to learning reading strategies.

Some final observations concerning the limitations of this study might be useful. Because the intact classes of one instructor at one institution were involved, the results may not be generally applicable to all reading

classes in other institutions. Also, this study was carried out with a particular group of students known to be lacking in language skills, so more investigations of the connection between reading and opinion writing with other populations may yield different results. In addition, where scheduling and curriculum allow, a dual class with time for both reading and writing may result in benefits not realized in this study.

In summary, the fact that reading comprehension is a complex process is not a new insight, as indicated by this luminary of the past, Thorndike:

"Understanding a paragraph is like solving a problem...The mind is assailed as it were by every word in the paragraph. It must select, repress, soften, emphasize, correlate and organize, all under the influence of the right mental set or purpose or demand (1917:324)"

However, the current emphasis on the view that both reading and writing are processes in composing meaning (Sanacore: 1983) has stimulated research studies concerning the reciprocal nature of those skills with the hope of shedding light on some of the complexity of the reasoning, the conscious decisions and strategies used.

The process-oriented research reported here has provided answers to some questions about the use of writing to enhance reading, but more questions need to be answered before the cognitive connection is understood, particularly

in relation to all of the potentials for individual differences. Further research into the use of writing tasks to help students perceive the structure of texts and to induce inferential reasoning can provide valuable insights into the selecting, organizing, and connecting that are integral to learning from text. The gathering of empirical evidence focusing on this process will strengthen instructional decisions concerning the reading/writing connection.

Conclusions

A number of instructional implications can be drawn from the research findings and conceptualizations discussed to this point. Perhaps the most apparent is that there can be some benefit in teaching reading and writing together as a thinking process requiring active involvement between the reader and author. The concern should be with the effective thinking strategies for making meaning within the constraints of the text, not with isolated subskills.

Specifically, the results of this study indicate that writing activities that are closely linked to the text read can help students increase their reading ability. Writing structural-responses to the text read enabled students to perceive and use text structure as an aid in learning. The steps are explicit, easily demonstrated on

overhead or blackboard, and give direction to a group discussion of the thought processes involved. This conscious use of structure led to relevant deductions based on accurate information. In addition, the process did transfer to other reading situations. It was concluded that this instructional model was a pragmatic way to use writing to increase understanding of written discourse as well as to increase the students' reasoning skills.

However, free writing of opinion responses did little to increase reading ability. It was not as effective as reading alone for increasing either total comprehension or inferential comprehension. In addition, it had inherent problems created by the students' lack of skills, and the difficulty of connecting their writing of widely ranging and often shallow opinions to a strategy helpful in other reading situations. Hence, it was concluded that time spent on the opinion-response writing was not warranted in a college reading class.

Recommendations for the Improvement of Practice, Including Strategies for Diffusion, Implementation and Improvement

The major recommendation resulting from this study is that the Structural-Response Instructional Model be incorporated into the reading curriculum at St. Petersburg Junior College as the instructional method for analyzing, summarizing, and responding to written discourse in the college

level reading classes. It has the potential for improving the reading program by developing the students' inferential and critical reading skills, a serious deficiency for many beginning college students. It also has the advantage that it accomplishes this improvement within the fixed boundaries of curriculum objectives, a fifteen-week semester, present materials, and instructor and staff capabilities.

With the current emphasis in Florida's community colleges on improving the students' reading skills (as well as writing and computation skills) to a specified competency level, efficacious instructional methods have great importance for many adult students. At the three SPJC campuses alone, 6,412 individuals were given the placement test in 1985. Of those, 3,903 were required to enroll in a reading course (45% in College Reading Techniques and 15% in Basic Skills, college preparatory classes). The findings of this study indicate that the utilization of the Structional-Response Instructional Model in the reading program will enable SPJC to better meet its educational committment to provide the level of skills required in the state mandate.

To that end, the complete results and recommendations as presented in this final report will be presented to the following administrators at St. Petersburg Junior College:

1. Academic Dean
2. Communication Division Director
3. English Department Head
4. Director of Research and Development

In addition, a summary of the background, results, and the complete methodology will be duplicated and given to each of the reading instructors and teaching assistants.

As the model does not require a curriculum change, a text book change, nor the purchase of additional materials beyond what is currently in the reading department, the decision to support this instructional model as the recommended method will be made by the Academic Dean upon the recommendation of the English Department Head.

As this small study involved one instructor and three groups of students, it is further recommended that the study be replicated with other students and other instructors. It is suggested each instructor radomly choose one class in which to introduce the Structural-Response Model and one to serve as a control group where the traditional reading-only method is used. This process would not only result in additional valuable information for evaluation of the model, it would also provide the opportunity for the instructors to work with the model and offer suggestions for its improvement before the decision to institute the change in all classes. For, as noted by the English Department Head, the success of the instructional change will rest with the staff. Thus, the major concern will be to present the model to them as a useful way to increase the students' reading/thinking skills. The next recommendation is directed toward enlisting their support, and creating a situation where change is possible.

It is recommended that a workshop be given for the reading instructors and teaching assistants to present the model after they have received the summary of results of the study and the methodology.

The English Department has one regular afternoon set aside for Staff Development each month. It is recommended that the Department Head schedule the suggested workshop for the reading instructors and teaching assistants for one of these regular sessions, thus not adding an additional meeting to the instructors' busy schedules.

It is also recommended that the agenda for the two-hour workshop consist of four major areas:

1. A summary of the major results of the study emphasizing a) the importance of students working with the whole of a paragraph to practice the reading skills in relation to one another, and b) the value of the students composing their answers rather than choosing a best answer from several ideas presented to them.

2. Presentation and explanation of the Structural-Response Model with a demonstration of a lesson. Here emphasis will be placed on the fact that the model does not require the instructors to have expertise in teaching writing skills, nor does it require them to grade written compositions.

3. Hand-outs with a suggested time table for the instructional stages of the model, suggested paragraphs from 100 Passages (Sack and Yourman:1983), with answer keys.

4. A discussion period to answer questions and seek suggestions for implementation.

To increase group involvement and to encourage group support for the change, it is also recommended that a portion of time at the informal weekly reading meetings be allotted to discussion of problems or successes that occur as the instructional model is put into practice. Additional training sessions could be arranged for the teaching assistants if it appears such would be helpful.

At the conclusion of the semester, an evaluation of this follow-up study would guide instructional decisions concerning continued use of the mode. Some possible additional questions to be considered:

1. Would the model be useful for students in the Basic Skills reading classes as well as the College Reading Techniques classes?

2. Would the model be useful in the one-credit independent Study Skills course offered at SPJC?

3. Is the model as effective with the evening reading classes where a larger percentage of the students are part-time and over the age of twenty-five?

4. Would it be advantageous to have a booklet written and duplicated for students outlining the rationale and the steps in the model, plus suggested extended use in text book studying? Such a booklet could have value for training future teaching assistants and peer tutors as well.

Strategies for Further Diffusion

Because of the current interest in the secondary and post-secondary reading field in the utilization of the reading/writing connection to improve reading skills, the results of the study will be made available to a wider audience of educators in the following ways:

1. A paper describing the study and presenting the results will be sent to the International Reading Association for possible publication in The Reading Forum.

2. A proposal was sent to present the paper at the International Reading Association Annual Convention, 1987.

3. An invitation has been accepted to present the model a the Florida College Level Academic Skills Program (CLASP) fall meeting for developmental educators as a possible strategy to help students achieve the required CLASP reading skills.

It is to be hoped that such opportunities will generate further research to extend the findings of this study. Empirical evidence to support the theoretical connection of reading and writing and to guide instructional decisions can most persuasively come from practioners who teach the two together. The emerging description of optimal teaching methods would be invaluable for many high school and community college reading instructors who are committed to the task of guiding as many students as possible to achieve the competencies now required for successful completion of degree requirements.

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